

REMARKS

Claims 1 to 20 and 22 to 33 are pending in this application. Claims 1 and 7 are the independent claims. Claim 7 is amended to include the limitations of claim 6. Claim 9 is amended to correct a lack of antecedent basis. Favorable reconsideration and further examination are respectfully requested.

Claims 1 to 20 and 22 to 33 were rejected under 35 U.S.C. §112, first paragraph, because the specification allegedly does not include “depositing a metal having a surface density in a range of 10^{12} cm^{-2} to 10^{15} cm^{-2} (see page 2 of the Office Action). Applicants respectfully point out that the Examiner has previously acknowledged that the PTO did receive an amendment filed under PCT Article 34 (enclosed herein) amending the claims and specification and that the amended claims should have been examined instead. The Article 34 amendment did include changes to the specification that included support for the claims. Applicants have included the PCT Article 34. Claim 9 was also rejected for antecedent basis. Based on the foregoing remarks and claim amendment, Applicants respectfully request withdrawal of the §112 rejections.

Claims 1 to 3, 8 to 11, 17, 19, 22 to 29, 32 and 33 are rejected under 35 U.S.C. § 102(b) as being anticipated by Uochi et al. (U.S. Patent Publication Number 20010053613 hereinafter “Uochi”). Claim 4 to 6, 15, 16, 18, 30 and 31 are rejected under 35 U.S.C. § 103(a) as being anticipated by Uochi. Claim 7, 12 to 14 and 20 are rejected under 35 U.S.C. § 103(a) as being anticipated by Uochi in view of Ohtani et al. (U.S. Patent Number 6,184,068 hereinafter “Ohtani”).

Amended claim 1 is directed to a phase transition method of an amorphous material that includes the steps of forming a cap layer on the amorphous material, depositing a metal having a surface density in a range of 10^{12} to 10^{15} cm⁻² on the whole surface of the cap layer to allow diffusion of the metal uniformly into the amorphous material and performing a phase transition on the amorphous material.

The applied art is not understood to disclose or to suggest the foregoing features of claim 1. In particular, Uochi does not disclose or suggest depositing a metal having a surface density in a range of 10^{12} to 10^{15} cm⁻² on the whole surface of the cap layer (emphasis added, see page 10, lines 13 to 17 of Applicants' specification).

Uochi teaches implanting metal ions into an amorphous silicon film (see paragraph [0025]). One of ordinary skill in the art understands that deposition and ion implantation are two different diffusion processes (see page 23 of Analog Integrated Circuits by Sidney Soclof enclosed herein). Thus, there is no deposition process in ion implantation; rather, the ions are driven into the material. Therefore, Uochi does not disclose or suggest depositing a metal having a surface density in a range of 10^{12} to 10^{15} cm⁻² on the whole surface of the cap layer to allow diffusion of the metal uniformly into the amorphous material.

Claims 7 have corresponding features to claim 1. Applicants submit that the Uochi reference should also be withdrawn with respect to claim 7 for at least the same reasons as claim 1.

Furthermore, with respect to amended claim 7 and original claim 6, Applicants submit that the cited art fails to teach depositing a second cap layer on the metal. The Examiner has

indicated that Uochi does not disclose depositing a second cap layer on the metal (see page 6 of the Office Action). However, the Examiner has indicated that it would be obvious to one of ordinary skill in the art in order “to move the metal ions from the crystalline semiconductor” (see page 6 of the Office Action). The Examiner has failed to explain why this would even be important in view Uochi. Furthermore, nowhere in Uochi is it suggested that depositing a second cap on a metal layer moves metals ions from the crystalline semiconductor. Moreover, as mentioned with respect to claim 1, Uochi does not use metal deposition but rather ion implantation. Therefore, it makes no reasonable sense to deposit a second cap layer on the metal when using ion implantation. Thus, one of ordinary skill in the art would not have been motivated to deposit a second cap layer for the reason suggested by the Examiner.

In order to determine obviousness, the following factual inquiries must be made: (1) determining the scope and content of the prior art, (2) ascertaining the differences between the prior art and the claimed invention; and (3) resolving the level of ordinary skill in the pertinent art (*Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1976)). A gap between the claimed invention and the prior art cannot be so great as to render the claimed invention “nonobvious to one of ordinary skill in the art” (*Dann v. Johnston*, 425 U.S. 219, 230 (1976)).

(o)ften it is necessary ... to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the market place; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit. (emphasis added, *KSR International Co., v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740-1741 (2007)).

Furthermore, “(R)ejections on obviousness cannot be sustained by mere conclusory statements; instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness” (Id., at 1741). Moreover, there should be an awareness “of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning” (Id., at 1742).

Nowhere in the Office Action has the Examiner has given a sufficient reason why it would have been obvious to one of ordinary skill in view of Uochi, which involves ion implantation, to deposit a second cap layer on the metal. Moreover, Applicants submit that the rejection is based on the Examiner's hindsight reconstruction of the cited art using Applicants' invention as a template.

Applicants submit that all dependent claims now depend on allowable independent claims.

Based on at least the foregoing reasons, Applicants request withdrawal of the art rejections.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for withdrawing the prior art cited with regards to any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as intent to concede any issue with regard to any claim, except as

specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

Applicants submit that the entire application is now in condition for allowance. Such action is respectfully requested at the Examiner's earliest convenience.


All correspondence should be directed to the address below. Applicants' attorney can be reached by telephone at (781) 401-9988 ext. 123.

Enclosed is a Petition for a One-Month Extension of Time and an Electronic fee. No other fee is believed to be due for this Response; however, if any fees are due, please apply such fees to Deposit Account No. 50-0845 referencing Attorney Docket: WELLT-014PUS.

Respectfully submitted,

Date: _____

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